

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-173006

(43)Date of publication of application : 26.06.2001

(51)Int.Cl.

E02F 9/00  
A01B 59/042  
E02F 3/96

(21)Application number : 11-357694

(71)Applicant : KUBOTA CORP

(22)Date of filing : 16.12.1999

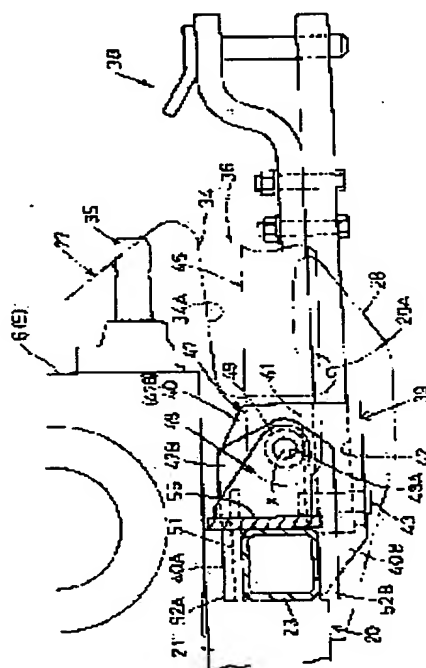
(72)Inventor : MIYAZAKI EIJI

## (54) WORK MACHINE FITTING DEVICE FOR TRACTOR

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To prevent the load of a tractive work machine from being applied directly to a tractor body and to suppress an increase of the body weight and cost by providing a draw bar frame via a fitting frame fitting the rear work machine such as a back hoe.

**SOLUTION:** The fitting frame 20 fitting the rear work machine and a draw bar frame 39 fitting a draw bar 38 are provided on the rear side of the tractor body 6 in this work machine fitting device for a tractor. The draw bar frame 39 is provided on the fitting frame 20.



## LEGAL STATUS

[Date of request for examination]

15.03.2002

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

3639166

[Date of registration]

21.01.2005

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

\* NOTICES \*

JPO and NCIP are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

## DETAILED DESCRIPTION

---

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the activity machine wearing equipment with which the posterior part side of a tractor is equipped.

[0002]

[Description of the Prior Art] As wearing equipment of the various activity machines with which the posterior part of a tractor car body is equipped There are a towage-type draw bar, a three-point link mechanism of a \*\*\*\* type, etc. among these, a draw bar It is attached in the inferior surface of tongue of a tractor car body free [ attachment and detachment ] to the draw bar frame fixed with the bolt. A three-point link mechanism A lower link is attached in the pivotable support pin by which the top link protruded on the method of the outside of right and left from the draw bar frame in the tractor car-body rear-face upper part respectively free [ vertical rocking ] (for example, reference, such as JP,8-112007,A).

[0003] Moreover, what attached in the tractor car body the wearing frame which equipped anterior part with the applied part for front loaders other than the above, and equipped the posterior part with the applied part for back hoes was known, and when the above three-point link mechanisms and draw bars were also installed with a wearing frame also in this kind of tractor and it equipped with a back hoe, it constituted so that a three-point link mechanism and a draw bar might be removed from a tractor car body.

[0004]

[Problem(s) to be Solved by the Invention] As mentioned above, when a draw bar frame was attached in the inferior surface of tongue of a tractor car body, it is necessary to raise the reinforcement of a tractor car body so that a load can be borne from a towage-type activity machine, therefore the body weight increased or the increase of cost was to be caused. As shown in drawing 6 , especially the tractor equipped with the applied part of a back hoe had become what formed the connector bar 101 extended to a longitudinal direction in the back-hoe side, and formed caudad the receptacle member 103 to which the connector bar 101 engages with an applied part 102 side after the tractor car body 104, and when it engages the connector bar 101 with this receptacle member 103, it needs to arrange this draw bar frame 105 in the low location so that this connector bar 101 and the draw bar frame 105 may not interfere.

[0005] Therefore, vertical spacing of the draw bar 106 attached in the draw bar frame 105 and the tractor car body 104 will become large, and the big moment came to be applied according to the load from a towage type activity machine by the bond part of the draw bar frame 105 and the tractor car body 104, therefore it will be necessary to strengthen reinforcement of the tractor car body 104 more, and problems, such as an increase of a body weight, had appeared notably. On the other hand, in the former, since the pivotable support pin of a lowerlink had fixed in the shape of a right-and-left cantilever to the draw bar frame, when stress concentrated on the end face section of a pivotable support pin, and it became easy to produce distortion and a pivotable support pin was exchanged, it had to carry out the whole draw bar frame.

[0006] Moreover, since the pivotable support pin of the check chain for lower link steady rests was attached in a wearing frame to the pivotable support pin of a lower link being fixed to a draw

bar frame, there was a problem that the alignment of both the pivotable support pin became difficult, and assembly workability got worse. By preparing a draw bar frame using the wearing frame equipped with posterior part activity machines, such as a back hoe, this invention prevents that the load from a towage-type activity machine is directly applied to a tractor car body, and aims at suppressing the increase of a body weight, the increase of cost, etc. by this.

[0007]

[Means for Solving the Problem] This invention has provided the following technical means, in order to attain the above-mentioned purpose. That is, this invention is characterized by preparing said draw bar frame in said wearing frame in the activity machine wearing equipment of a tractor equipped with the wearing frame which equips a tractor car body with a posterior part activity machine, and the draw bar frame which attaches a draw bar.

[0008] It becomes possible to take charge of the load from the towage type activity machine with which a draw bar is equipped by the wearing frame according to this, and by preventing that this load is directly applied to a tractor car body, in order to raise the reinforcement of this tractor car body, a body weight can increase, and what causes the increase of cost by this can be prevented. Moreover, this invention has the back frame which said wearing frame extends to the longitudinal direction arranged in the posterior part bottom of a tractor car body, and the connection section with which it is arranged behind this back frame and the covering arrival implement by the side of said posterior part activity machine is connected, and is constituted, and said draw bar frame is characterized by being prepared in the back frame side between a back frame and the connection section.

[0009] A draw bar frame can be arranged in the optimal location by this, without the covering arrival implement and draw bar frame by the side of a posterior part activity machine interfering, and further, in order to prepare a draw bar frame to the back frame arranged in the posterior part bottom of a tractor car body, even if it considers this draw bar frame as low arrangement, the moment concerning both bond part can be made small as much as possible. This invention is characterized by having prepared the attachment member attached for the lower link which constitutes a three-point link mechanism on said back frame, enabling free rocking, and the attachment member attached for the other end of the check chain by which the end was connected to the lower link, enabling free rocking.

[0010] According to this, since both a lower link and a check chain are attached in the same back frame, the alignment of both rocking supporting point etc. can be performed now correctly and easily, and its assembly workability improves. Furthermore, this invention is characterized by having prepared the attachment member which attaches the pivotable support pin of the lower link which constitutes a three-point link mechanism on said back frame in the shape of both \*\*\*\* free [ attachment and detachment ]. Thus, by preparing the attachment member of a pivotable support pin in the back frame extended to a longitudinal direction, it becomes possible to support a pivotable support pin in the shape of both \*\*\*\*, and distortion of a pivotable support pin, deformation, etc. can be prevented now by this. Moreover, since sufficient support reinforcement can be obtained even if it does not fix a pivotable support pin to an attachment member by considering as the shape of both \*\*\*\*, attachment and detachment of a pivotable support pin are enabled, and it can make it possible to perform exchange etc. by the pivotable support pin independent.

[0011]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to a drawing. Drawing 5 shows the tractor 1 possessing the activity machine wearing equipment concerning this invention, and this tractor 1 constitutes the activity vehicle by which anterior part was equipped with the front loader 2, and it equipped the posterior part with the back hoe (posterior part activity machine concerning this invention) 3, respectively and which is called the so-called TLB (tractor front loader back hoe). A tractor 1 is equipped with the tractor car body 6 which linked an engine 4, flywheel housing, the clutch housing, and the missions case 5 grade with the cross direction directly, and constituted them, and this tractor car body 6 is supported possible [ transit ] by the front wheel 7 of a right-and-left pair, and the rear wheel 8 of a right-and-left pair.

[0012] The engine 4 is covered with the bonnet 10, the operation section which has a driver's seat 11 and steering handle 12 grade is prepared behind this bonnet 10, and the rear wheel fender 13 is formed in the right-and-left side of a driver's seat 11. The driver's seat 11 is supported free [ rotation ] by the floor sheet on the missions case 5 at the circumference of a normal-axis alignment, and posture turning of it is made free at the positive posture in which a tractor 1 and a front loader 2 are controlled, and the backward posture in which a back hoe 3 is controlled. The back hoe 3 is constituted in preparation for the back end of a machine frame 14 in the rig 15. On the machine frame 14, as shown also in drawing 4 , step 16 for operators is formed in the shape of a front protrusion, and the actuation box 18 which has the operation lever 17 on this step 16 is set up.

[0013] The wearing frame 20 for equipping with a front loader 2 and a back hoe 3 is formed in the tractor car body 6. As this wearing frame 20 also has the function as a reinforcement frame which mitigates the load applied to the tractor car body 6 by supporting the load from a front loader 2 and a back hoe 3 and is shown in drawing 5 The side frame 21 of a Uichi Hidari pair which it is arranged at the method of lower left right-hand side of the tractor car body 6, and is extended to a cross direction, It is constituted in the shape of a plane view rectangle frame by the front frame 22 extended to a longitudinal direction so that the front end of the right-and-left side frame 21 may be connected mutually, and the back frame 23 extended to a longitudinal direction so that the back end of the right-and-left side frame 21 may be connected mutually.

[0014] The right-and-left central site of the front frame 22 is being fixed to the flank of the tractor car body 6 through the connecting plate etc., the applied part 25 for front loader 2 is formed in the right-and-left flank of this front frame 22, and the applied part 26 for back-hoe 3 is formed in the back end of the right-and-left side frame 21. The carrying member 27 which is prepared in the back end of right-and-left each side frame 21, and consists of plates 27A and 27B of a right-and-left pair as the applied part 26 for this back-hoe 3 is shown also in drawing 2 - drawing 4 , The receptacle member 28 which has concave connection section 28A which it is prepared in the lower part of a carrying member 27, and the bottom opened wide, It has the mounting bar 29 of the shape of a rod of a longitudinal direction prepared in the upper part of a carrying member 27, and the halfway section of a carrying member 27 is connected with the rear axle case 30 which projects in the method of the outside of right and left from the tractor car body 6.

[0015] In said back hoe 3, as shown in drawing 4 , while the covering arrival plate 31 of a Uichi Hidari pair is formed in the before [ a machine frame 14 ] side both-sides section, covering the lower part of this covering arrival plate 31 at the right-and-left covering arrival plate 31 and extending to a longitudinal direction, the connector bar (covering arrival implement) 32 which fits in from the bottom to connection section 28A of said receptacle implement 28 is formed.

Moreover, the mounting holder 33 which grasps said mounting bar 29 is formed in the upper part of the covering arrival plate 31. And it is equipped with a back hoe 3 free [ attachment and detachment ] to an applied part 26 by rotating a machine frame 14 to a before side, and putting the mounting bar 29 between the circumference of the axial center of this connector bar 32 from the upper and lower sides with a holder 33, where fitting (connection) of the connector bar 32 is carried out to said connection section 28A.

[0016] It is the back end edge of a carrying member 27, and popularity is won, the guide section 34 which projects back is formed above the member 28, and the back end of this guide section 34 is projected more back than the back end of the PTO shaft 35 with which the rear face of the tractor car body 6 was equipped. Moreover, while margo-inferior 34A of the guide section 34 inclines toward a front lower part a little in the bottom location of the PTO shaft 35 By minding the guidance way 36 where that front end continues a before [ connection section 28A ] side, wins popularity with this guide section 34, and is formed between members 28, and inserting or seceding from the connector bar 32 He is trying for this connector bar 32 not to contact the posterior part of the PTO shaft 35 or the tractor car body 6.

[0017] Said back frame 23 is formed with square pipe steel etc., the posterior part bottom of the tractor car body 6 is passed to a longitudinal direction, and the draw bar frame 39 which attaches the draw bar 38 equipped with a towage-type activity machine free [ attachment and

detachment ] is formed in the right-and-left abbreviation center section. This draw bar frame 39 has the side plate 40 of a right-and-left pair, the superior lamella 41 which connects this side plate 40 of each other, and the inferior lamella 42, as shown in drawing 1 - drawing 3 . The upper part and the lower part of the right-and-left side plate 40 are extended ahead, by these vertical extensions 40A and 40B, the back frame 23 was put and the margo inferior of upper extension 40A, the upper limb of bottom extension 40B, and the first transition of a side plate 40 have fixed by welding to the peripheral face of the back frame 23.

[0018] It has been arranged so that it may extend in back from the rear-face lower part of the back frame 23, and the front end edge fixed by welding to the back end side of the back frame 23, and right-and-left both ends have fixed the superior lamella 41 by welding to the side plate 40. The right-and-left both ends have fixed an inferior lamella 42 by welding to the side plate 40 while it sets predetermined spacing to the superior lamella 41 down side and is arranged at it. And a draw bar 38 is attached in the draw bar frame 39 free [ right-and-left rocking ] and free [ attachment and detachment ] by the connection pin 43 which the front end section of a draw bar 38 is inserted into the cylinder surrounded with the right-and-left side plate 40 and the vertical plates 41 and 42, and penetrates the vertical plates 41 and 42 and a draw bar 38 up and down.

[0019] Since the load from the activity machine with which the draw bar 38 was equipped by attaching the draw bar frame 39 in the back frame 23 as mentioned above can be taken charge of by the frame 23 after this, like the conventional technique, in order to form the draw bar frame 39 in the tractor car body 6, it is not necessary to raise the reinforcement of the tractor car body 6, and car-body weight increase and the increase of cost can be suppressed. Moreover, by putting the back frame 23 from the upper and lower sides by the extensions 40A and 40B which the side plate 40 formed up and down, the bonding strength of the draw bar frame 39 and the back frame 23 can be raised, and the moment produced in both joint can be resisted now.

[0020] Moreover, since the draw bar frame 39 is received with the back frame 23 and it is arranged between the connection section 28A order of a member 28, in case the connector bar 32 is connected with connection section 28A, it is prevented that this connector bar 32 and the draw bar frame 39 interfere. It has the three-point link mechanism which equips with activity machines, such as a rotary tilling machine, free [ rise and fall ], and the top link (illustration abbreviation) of this three-point link mechanism is attached free [ attachment and detachment ] through the mounting bracket 53 of tractor car-body 6 rear face, and a lower link 45 and the check chain (steady-rest member) 46 are attached in the posterior part side of the tractor car body 6 free [ attachment and detachment ] through the attachment members 47 and 48 prepared in the posterior part frame 23.

[0021] The attachment member 47 for lower links has the support plates 47A and 47B of a right-and-left pair, and the pivotable support pin 50 which supports a lower link 45 free [ vertical rocking ] is inserted in free [ attachment and detachment ] to the boss section 49 prepared in each support plates 47A and 47B. Among the support plates 47A and 47B of a pair, the thing of right-and-left inside 47A consists of side plates 40 of the draw bar frame 39, and is planning the decrease of components mark by this. Moreover, support plate 47B of a right-and-left outside is mutually connected with inside support plate 47A by the connecting plate 51, holds support plate 47A of a pair, and 47B spacing by this connecting plate 51, and it is considered so that there may be no trouble in insertion and detachment of the pivotable support pin 50 etc., while predetermined spacing detached building \*\*\*\*\* is carried out from inside support plate 47A.

[0022] While equipping the front end upper and lower sides of outside support plate 47B with the vertical extensions 52A and 52B extended to the front and putting the back frame 23 from the upper and lower sides by these vertical extensions 52A and 52B The bonding strength of outside support plate 47B and the back frame 23 is raised as the margo inferior of upper extension 52A, the upper limb of bottom extension 52B, and the first transition of support plate 47B should fix by welding to the peripheral face of the back frame 23, respectively, and come. As mentioned above, since the pivotable support pin 50 of a lower link 45 is supported in the shape of right-and-left both \*\*\*\* by the attachment member 47 which has the support plates 47A and 47B of a pair, stress concentration given to the edge of the pivotable support pin 50 can be lessened,

distortion, deformation, etc. can be prevented, and pivotable support pin 50 independent one can perform exchange etc. by enabling attachment and detachment of the pivotable support pin 50 to the attachment member 47.

[0023] The back end is connected to the lower link 45 order halfway section, and, as for the check chain 46, the front end is attached in the attachment member 48 free [ vertical rocking ]. This attachment member 48 consists of a plate attached in the shape of a back protrusion to the back up plate 55 which fixed on the right-and-left both-ends rear face of the back frame 23, and forms support hole 48A which pivotable support pin 46A of the check chain 46 inserts in that back end section. Thus, since both the attachment members 47 and 48 of a lower link 45 and the check chain 46 are formed in the back frame 23, heart X doubling (heart X doubling of the boss section 49 and support hole 48A) of these pivotable support pins 50 and 46A can be performed easily and correctly using a fixture etc. in the assembly process of the wearing frame 20.

[0024] A design change is possible for this invention suitably, without restricting to the above-mentioned operation gestalt. For example, although you may make it attach the draw bar frame 39 and the attachment members 47 and 48 using conclusion implements, such as a bolt instead of welding, to the posterior part frame 23 and support plate 47A of the attachment member 47 for lower link 45 and the side plate 40 of the draw bar frame 39 are made to serve a double purpose, these may be prepared as another object. As a posterior part activity machine 3, it is good also not only as a back hoe but other activity machines, and this invention is not limited by the existence of the front loader 2 by the side of anterior part.

[0025]

[Effect of the Invention] As explained in full detail above, it can prevent adding the load from a towage-type activity machine to a tractor car body directly by preparing a draw bar frame to the wearing frame equipped with posterior part activity machines, such as a back hoe, according to this invention, and the increase of a body weight, the increase of cost, etc. can be suppressed now by this.

---

[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.\*\*\*\* shows the word which can not be translated.

3.In the drawings, any words are not translated.

---

DESCRIPTION OF DRAWINGS

---

[Brief Description of the Drawings]

[Drawing 1] It is the side elevation showing the important section of the activity machine wearing equipment concerning the operation gestalt of this invention.

[Drawing 2] It is this top view.

[Drawing 3] It is this rear view.

[Drawing 4] It is the side elevation showing the joining segment of a posterior part activity machine.

[Drawing 5] It is the whole tractor (TLB) side elevation.

[Drawing 6] It is the side elevation showing the important section of the activity machine wearing equipment concerning the conventional technique.

[Description of Notations]

1 Tractor

3 Back Hoe (Posterior Part Activity Machine)

6 Tractor Car Body

20 Wearing Frame

23 Back Frame

26 Back-Hoe Applied Part

28A Connection section

31 Connector Bar (Covering Arrival Implement)

38 Draw Bar

39 Draw Bar Frame

45 Lower Link

46 Check Chain

47 Attachment Member

48 Attachment Member

50 Pivotal Support Pin

---

[Translation done.]



**\* NOTICES \***

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.\*\*\*\* shows the word which can not be translated.

3.In the drawings, any words are not translated.

---

**CLAIMS**

---

**[Claim(s)]**

[Claim 1] Activity machine wearing equipment of the tractor characterized by preparing said draw bar frame (39) in said wearing frame (20) in the activity machine wearing equipment of a tractor equipped with the wearing frame (20) which equips a tractor car body (6) with a back activity machine (3), and the draw bar frame (39) which attaches a draw bar (38).

[Claim 2] After extending said wearing frame (20) to the longitudinal direction arranged in the back bottom of a tractor car body (6), a frame (23), It has the connection section (28A) with which it is arranged behind the after [ this ] frame (23), and the covering arrival implement (32) by the side of said back activity machine (3) is connected. Activity machine wearing equipment of the tractor according to claim 1 by which said draw bar frame (39) is characterized by being prepared in the frame (23) side behind between an after frame (23) and the connection section (28A).

[Claim 3] Activity machine wearing equipment of the tractor according to claim 2 characterized by having the mounting member (47) attached for the lower link (45) which constitutes a three-point link mechanism on said after frame (23), enabling a free splash, and the mounting member (48) attached for the other end of the check chain (46) by which the end was connected to the lower link (45), enabling a free splash.

[Claim 4] Activity machine wearing equipment of the tractor according to claim 2 characterized by having prepared the mounting member (47) which attaches the pivotable support pin (50) of the lower link (45) which constitutes a three-point link mechanism on said after frame (23) in the shape of both \*\*\*\* free [ attachment and detachment ].

---

[Translation done.]